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(54) A system for creating the effect of a stationary or moving image

(57) A system for creating the effect of stationary or moving images, in the eye of a moving observer, has a series of stationary displays (A,B,C) mounted on a tunnel wall for viewing in sequence by the observer in a train moving in direction M. An isolator in the form of slits in a screen enables each display to be viewed separately from the other displays in the sequence and the separate images of each display formed in the eye of an observer are superimposed to form the stationary or moving image. If each display is identical then a stationary image is formed, alternatively if each display is arranged to represent sequential movement, then a moving image is formed. Alternatively, the displays may be mounted on the back of the screen and a mirror mounted on the tunnel wall (Fig 2). Instead of using slits, a series of flashes trigg red by the moving train light the displays sequentially (Fig 3).

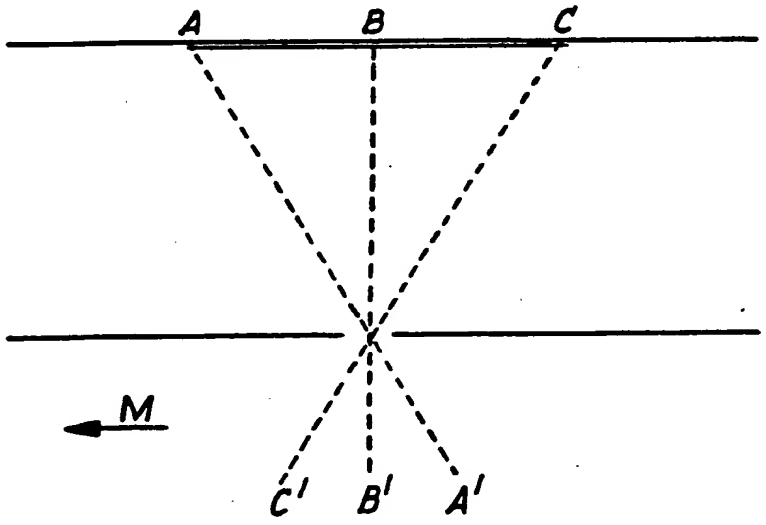

FIG. 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

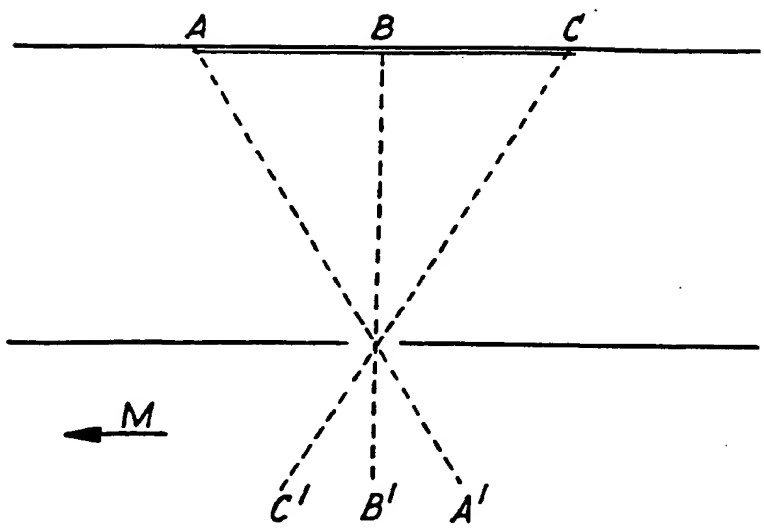

FIG. 1

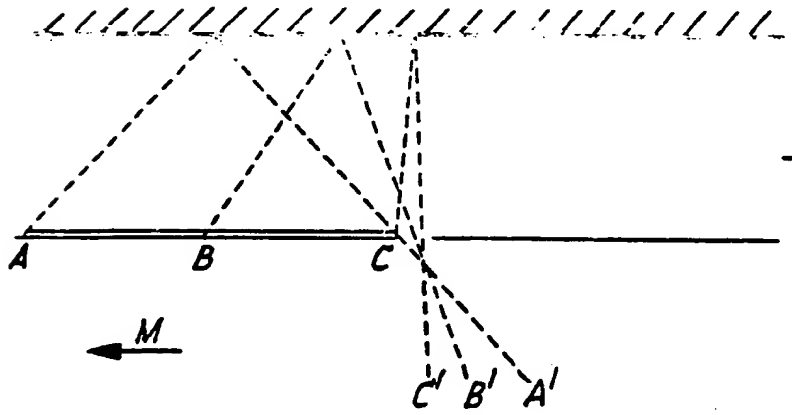

FIG. 2

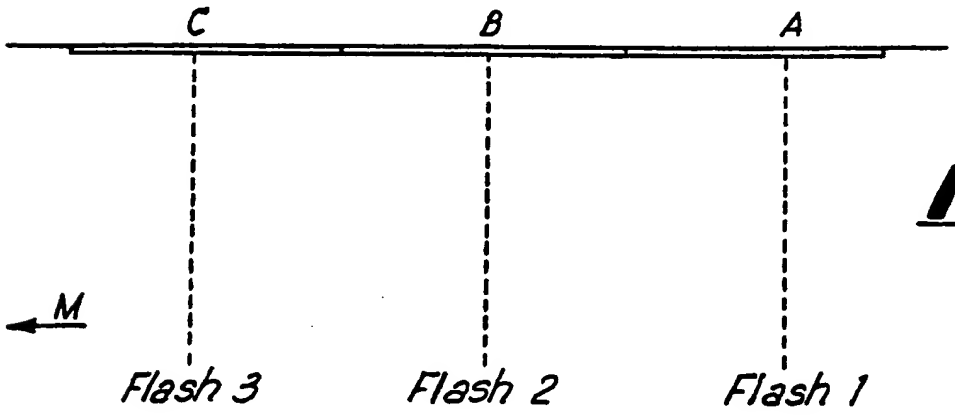

FIG. 3

A SYSTEM FOR CREATING THE EFFECT OF A STATIONARY OR MOVING IMAGE

This invention relates to a system for creating the effect of a stationary or moving image.

It has been known to produce the effect of a moving image by arranging a series of moving pictures to be viewed through a shutter type arrangement by a stationary observer. Such an arrangement comprises a series of pictures mounted around the inner periphery of a rotatable cylinder whereby each picture can be brought into view successively. The shutter arrangement comprises a number of slits in the cylinder through which the pictures can be viewed, which act to keep each image formed on the retina stationary by allowing only a brief glimpse of the picture, and a stationary slit held by the observer in front of his eye to restrict his field of view to only a single moving slit.

It has now been realised that if a number of laterally spaced pictures on displays are viewed by an observer who is moving relative to and past the displays, and having a suitable shutter arrangement to isolate each display, a similar effect can be obtained.

Furthermore, it has also been realised that by arranging for each of the abovementioned pictures to be identical then the image viewed by the observer will be that of a stationary image.

It is an object of the present invention to provide a system whereby the effect of a stationary or moving image can be created in the eye of an observer who is moving past a series of stationary displays.

According to the present invention there is provided a system for creating the effect of a stationary or moving image comprising:-

a plurality of displays mounted for successive viewing at an observation point; and

means for isolating said displays from each other, characterised in that said observation point is movable relative to said displays whereby images of successive displays formed at the observation point, say in the eye of an observer located at that point, are superimposed thereby producing the effect of a stationary or moving image.

With this arrangement it is possible for the illusion of a stationary or moving image to be created for an observer who is moving relative to a series of stationary displays.

In the case where it is desired to produce the effect of a moving image, said displays are different and are arranged to represent sequential movement. Alterntively, where it is desired to produce the effect of a stationary image, said displays may be substantially the same.

Said isolating means may comprise a screen having multiple slits therethrough or may comprise a selective illumination device. In the former case the screen may be interposed between the displays and the observer whereby viewing of the displays is permitted only through the slits. Said slits may be substantially vertical and may be equispaced along the screen.

Said displays may be of opaque material and may be of substantially the same shape and size. Said displays may be disposed along a common axis and the screen may be arranged such that it extends generally parallel to the axis of the displays. Each slit may be aligned with the centre of a respective one of said displays.

Where a selective illumination device is used this may be arranged to illuminate each display in succession or may illuminate all displays at the same time. Said illumination device may be arranged to switch on and off at a predetermined rate and/or at predetermined times, thus the device may be a stroboscopic light source.

The illumination of the displays may be arranged to occur when the observer is in an appropriate position to view the display and therefore the light source may be arranged to switch on and off in accordance with movement of the observer and preferably is arranged to switch on and off at a rate determined by the speed of movement of the observer past the displays.

Preferably the observer moves in a direction parallel to the axis of the displays.

In order to determine the rate at which the light source should be switched, sensing means may be provided to detect the speed of the observer. Said sensing means may be actuated by the observer and may comprise two photocell beam devices spaced by a known distance in the direction of motion of the observer. Thus the line between the observer actuating the first and second devices is indicative of the speed of the observer.

Said displays may be mounted on an external structure or may be mounted on the opposite side of the screen to the observer and may be interposed between respective slits. Where the displays are provided on the screen a mirror may be provided whereby the displays can be viewed by the observer through the slits. Said mirror preferably extends parallel to the axis of the screen and the direction of movement of the observer.

It is envisaged that the invention will find particular application in the display of advertising material in train or underground railway tunnels. In this case the displays are mounted on the tunnel walls and are illuminated by a stroboscopic light source whose frequency is determined by the speed of the passing train. Thus an observer on the train would see the effect of a continuously moving image.

However, other applications are readily apparent, for example in fairground rides or the like.

The invention will now be described further by way of example only and with reference to the accompanying drawings of which:-

Figure 1 is a schematic representation of one form of system according to the invention;

Figure 2 is a schematic representation of an alternative system; and

Figure 3 is a schematic representation of a third embodiment of the system.

Referring now to the figures, Figure 1 shows a first embodiment of the system adapted for use in the display of advertisements on a tunnel wall and which comprises a number of pictures mounted on such wall, a screen having multiple slits provided therein and an observer who is moving relative to the pictures in a train.

The pictures comprise successive different images and are all of the same dimensions. The centres of the respective pictures are equispaced and are arranged axially in the direction of motion of the train.

The screen is mounted parallel to the axis of the pictures and thus the tunnel wall. The screen is mounted such that the slits extend vertically and each slit is aligned with the centre of a respective one of the pictures. The screen is disposed between the pictures

and the train containing the observer.

Thus with the motion of the train in the direction of the arrow it can be seen that when an observer is at A' then he will be able to see the extreme edge A of the picture through the slit and on subsequent movement through positions B' and C', he will be able to see the centre of the picture B and the other extreme edge C respectively. Therefore on passage from A' to C' a complete image of the picture is built up on the retina of the observer. The slit acts to isolate each picture from the preceding and subsequent ones and therefore allows single complete images to be formed on the retina of the observer.

The motion of the train then takes the observer towards the next picture which is viewed in a manner similar to that described above. By appropriate spacing of the pictures and the slits, and appropriate dimensions of the pictures it is possible, for a particular speed of the train, to achieve a superimposition of images on the retina which leads to the production of an apparent moving image which the observer views. Of course, by arranging for each successive picture to be identical, an apparent stationary image can be produced.

An alternative embodiment is shown in Figure 2 which uses a slitted screen to isolate the individual pictures from each other as above. However the pictures are not

mounted on the tunnel wall in this embodiment but are instead mounted on the back surface of the screen, that is the surface of the screen not visible to the observer. The pictures are observed by the observer by means of a mirror mounted on the tunnel wall. This arrangement has the same effect as that described above and the method of image formation is generally similar. Thus as the train moves in the direction of the arrow the image of the picture is built up on the retina of the observer by looking at parts of the picture through the slit via the mirror. Once again appropriate matching of the picture spacing and slit dimensions leads to the illusion of a stationary or moving image in the eye of the observer.

The advantage of this embodiment over that previously described is that by the use of the mirror the screen-tunnel wall separation can be halved allowing a greater clearance between the train and the screen.

Figure 3 shows a further embodiment in which the isolation of each picture is achieved by the illumination thereof by a stroboscopic light source. In order that successive flashes illuminate the pictures at the appropriate time, the frequency of the stroboscopic light is arranged such that the time between the flashes corresponds to the time for the train to move a distance corresponding to the distance between the centres of adjacent pictures.

Thus, with the train moving in the direction of the arrow, the first flash would occur with the observer at A' allowing him to observe picture A. The next flash would occur with the observer at B' allowing him to observe picture B. The image of picture B would be superimposed on that of A on the retina of the observer and therefore the illusion of continuously moving or stationary images can be created.

In order to ensure accurate initiation and cessation of the stroboscopic illumination, the stroboscope is arranged to be activated by the train itself. Thus upon reaching the region where the pictures start the train interrupts two photocell beam systems of known distance apart. The time between such interruptions is indicative of the train speed and the stroboscope frequency is adjusted accordingly in order that the individual pictures can be illuminated at the appropriate time allowing the superimposition of the images on the retina of the observer. In a similar manner the stroboscope may be deactivated after the train has passed through the region.

In order that the driver of the train is not distracted by the flashes of light, a delay may be introduced such that the stroboscope is not activated until the driver's cab of the train has passed into a position where the flashes cannot be seen.

In order that the image blur due to ambient light from the train windows is minimised, it is necessary that the intensity of the stroboscopic flash is relatively high.

An advantage of the stroboscopic arrangement for picture isolation is that the position of the observer is not of extreme importance. Thus an observer who is not aligned with the centre of the picture when the flash occurs will not have his perception of the image affected. Indeed even if the observer observes neighbouring pictures when the flash occurs, this should not detract from the effect since each will appear to be moving.

With this arrangement it is possible for an observer to view an apparent stationary or moving image when passing a series of stationary displays allowing the possibility of attractive and effective advertising displays.

It is of course to be understood that the invention is not intended to be restricted to the details of the above embodiments which are described by way of example only.

For example, it may be possible to create a 3-dimensional image by arranging the fixed displays to be displaced relative to each other in a direction perpendicular to the direction of motion of the observer.

CLAIMS

1. A system for creating the effect of a stationary or moving image comprising:-

a plurality of displays mounted for successive viewing at an observation point; and

means for isolating said displays from each other, characterised in that said observation point is movable relative to said displays whereby images of successive displays formed at the observation point, say in the eye of an observer located at that point, are superimposed thereby producing the effect of a stationary or moving image.

2. A system according to claim 1, wherein said isolating means comprises a screen having multiple slits therethrough.

3. A system according to claim 2, wherein said screen is interposed between said displays and the observer whereby viewing of the displays is permitted only through the slits.

4. A system according to claim 2 or claim 3, wherein said slits are substantially vertical.

5. A system according to any one of claims 2 to 4, wherein said slits are equispaced along the screen.

6. A system according to claim 1, wherein said isolating means comprises a selective illumination device.

7. A system according to any one of claims 1 to 6, wherein said displays are of an opaque material.

8. A system according to any one of claims 1 to 7, wherein said displays are disposed along a common axis.

9. A system according to claim 8 when dependent on claim 2, wherein said screen is arranged such that it extends generally parallel to said axis of the displays.

10. A system according to claim 2 or any claim dependent thereon, wherein each slit is aligned with a centre of a respective one of said displays.

11. A system according to claim 6, wherein said selective illumination device is arranged to illuminate each display in succession.

12. A system according to claim 6, wherein said selective illumination device is arranged to illuminate all displays at the same time.

13. A system according to claim 11 or claim 12, wherein said illumination device is arranged to switch on and off at a predetermined rate and/or predetermined times.

14. A system according to any one of claims 11 to 13, wherein said illumination device comprises a stroboscopic light source.

15. A system according to claim 13, wherein said illumination device is arranged to switch on and off at a pr determined rate determined by the speed of movement of the observer past the displays.

16. A system according to any one of claims 1 to 15, wherein the observer moves in a direction parallel to the axis of the displays.

17. A system according to claim 15 or claim 16, wherein the predetermined rate at which said device should be switched is determined by sensing means which detects the speed of the observer.

18. A system according to claim 17, wherein said sensing means is acuated by the observer.

19. A system according to claim 17 or claim 18, wherein said sensing means comprises two photocell beam devices spaced by a known distance in the direction of motion of the observer, whereby the time elapsed between the observer actuating each device is indicative of the speed of the observer.

20. A system according to any one of claims 1 to 19, wherein said displays are mounted on an external structure.

21. A system according to claim 2 or any claim dependent thereon, wherein said displays are mounted on an opposite side of each screen to the observer.

22. A system according to claim 21, wherein a mirror is provided whereby the displays can be viewed by the observer through the slits.

23. A system according to claim 22, wherein said mirror extends generally parallel to the axis of the screen and

the direction of movement of the obsever.

24. A system substantially as hereinbefore described with reference to and as illustrated in Figure 1, 2 or 3.